

AMENDMENTS TO THE CLAIMS

Please cancel claims 2, 3, 16, 17, and 27-30 without prejudice to further prosecution in a divisional, continuation, continuation-in-part or other application. Please amend claims 1, 4-7, 9, 14, 15, 18-20, 22 as follows. Note that the amendments to claims 4, 6, 7, 14, 18-20 are simply to correct typographical errors (claims 4, 6, 14, 18, 19) or to amend the claims (claims 7, 20) in keeping with the amendments to the claim language of the independent claims, and are not in response to any rejection in the Office Action. Note that new claims 31-32 do not add new matter.

1. (Currently Amended) A system for tracking and regulating an optical beam, comprising:

- a) at least one solid-state optical beam regulator comprising at least one stress-optic refractor, said optical beam passing through said at least one optical beam regulator;
- b) an optical sensing device;
- c) a computer for calculating control signals using beam information from the optical sensing device, wherein said control signals control said at least one optical beam regulator.

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The system of claim 1 wherein said at least one beam regulator is capable of two-dimensional steering.

5. (Currently Amended) The system of claim 1 wherein the optical sensing device monitors uses a portion of the optical ~~transmitted~~ beam reflected from ~~a the~~ target as ~~the beacon for tracking, steering and shaping the transmit beam.~~

6. (Currently Amended) The system of claim 1 wherein said at least one beam regulator acts as a lens to re-focus the beam or return the beam to a collimated state.

7. (Currently Amended) The system of claim 1 wherein said at least one solid-state optical beam regulator is comprised of the system includes two one-dimensional stress-optic refractors in series.

8. (Original) The system of claim 1 wherein the optical sensing device is a CMOS imaging device.

9. (Currently Amended) The system of claim 1 wherein the optical sensing device senses a region of interest that is less than a full ~~the total frame area, so as to perform at a faster frame rate, thereby allowing the device to respond to faster beam movements.~~

10. (Original) The system of claim 1 wherein the optical sensing device provides beam position and shape information to the computer and thence to the regulator at speeds greater than 1 kHz and position accuracies better than 1 microradian.

11. (Original) The system of claim 1 wherein the computer receives information about the beam's position from the optical sensing device, calculates the beam's displacement from a reference position, and then sends steering signals to the beam regulator, so as to steer the beam toward the reference position.

12. (Original) The system of claim 1 wherein the computer receives information about the beam's size and shape from the optical sensing device, calculates the beam's deviation from desired collimation, and then sends shaping signals to the beam regulator, so as to shape the beam toward the desired collimation.

13. (Original) The system of claim 1 wherein the system steers the beam in two dimensions and at microradian accuracy.

14. (Currently Amended) The system of claim 1 wherein said at least one beam regulator can function at frequencies greater than 1 kHz.

15. (Currently Amended) A system for tracking ~~an optical beam~~ and regulating an optical beam over a range of frequencies including frequencies greater than 1 kHz, comprising:

- a) at least one optical beam regulator comprising a stress-optic refractor;
- b) an optical sensing device; and
- c) a computer for calculating steering and/or shaping signals using beam information from the optical sensing device, wherein said steering and/or shaping signals control said at least one optical beam regulator, said optical beam passing through said at least one optical beam regulator.

16. (Canceled)

17. (Canceled)

18. (Currently Amended) The system of claim 15 wherein said at least one beam regulator is capable of two-dimensional steering.

19. (Currently Amended) The system of claim 15 wherein said at least one beam regulator acts as a lens to re-focus the beam or return the beam to a collimated state.

20. (Currently Amended) The system of claim 15 wherein said at least one solid-state optical beam regulator is comprised of the system includes two one-dimensional stress-optic refractors in series.

21. (Original) The system of claim 15 wherein the optical sensing device is a CMOS imaging device.

22. (Currently Amended) The system of claim 15 wherein the optical sensing device senses a region of interest that is less than a full ~~the total frame area, so as to perform at a faster frame rate, thereby allowing the device to respond to faster beam movements.~~

23. (Original) The system of claim 15 wherein the optical sensing device provides beam position and shape information to the computer and thence to the regulator at speeds greater than 1 kHz and position accuracies better than 1 microradian.

24. (Original) The system of claim 15 wherein the computer receives information about the beam's position from the optical sensing device, calculates the beam's displacement from a reference position, and then sends steering signals to the beam regulator, so as to steer the beam toward the reference position.

25. (Original) The system of claim 15 wherein the computer receives information about the beam's size and shape from the optical sensing device, calculates the beam's deviation from desired collimation, and then sends shaping signals to the beam regulator, so as to shape the beam toward the desired collimation.

26. (Original) The system of claim 15 wherein the system steers the beam in two dimensions and at microradian accuracy so as to point the beam continuously at a distant receiver.

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (New) The system of claim 1, further comprising:
means for transmitting a beacon beam, said beacon beam passing through said at least one optical beam regulator; and
means for directing said beacon beam onto said optical sensing device after said beacon beam has passed through said at least one optical beam regulator.

32. (New) The system of claim 15, further comprising:

means for transmitting a beacon beam, said beacon beam passing through said at least one optical beam regulator; and

means for directing said beacon beam onto said optical sensing device after said beacon beam has passed through said at least one optical beam regulator.